

SHEET INDEX

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4	APP FIG. 3
5	CAD 1

CIRCUIT NOTES:

101.	DESIG	FUSE AMP	POTENTIAL	ONE PER
	1	1/3	-48 SIG X	CKT
BATTERY SYMBOL			VOLTAGE RANGE	
-48			42.5 - 52.5V	

X THE FUSE FOR THE 48V SIG. BAT. SHALL BE MOUNTED ON A BUS BAR FED BY A LEAD WHICH DOES NOT FEED SIGNAL BAT. TO ANY OTHER CKT.

102.

FEATURE OR OPTION		APP FIG.	APP FIG.	QUANTITY
		1	2	1 PER CKT
TONE GENERATOR CKT	FOR OTHER THAN ESS APPLICATIONS	1	2	
	FOR ESS APPLICATION (SEE NOTE 105)	2	1	
GROUNDED ALARM INDICATION				
BOD-CHM BATTERY ALARM INDICATION				

103.

NETWORK VALUES		
NETWORK NO.	RESISTANCE IN OHMS	CAPACITANCE IN UF

104.

RECORD OF APP FIGURES, WIRING AND APPARATUS CHANGES						
CHANGED ON ISS	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION HAS BEEN	SEE NOTE	USE IN CIRCUIT	STD	APP NO
70	W OR W	102	V	W		
108	U	NONE	U			
110	T	U	T	U		
150	P	U	P	U		
160		108		U		

105. 2 WIRING IS FURNISHED WITH UNIT AS MANUFACTURED.
REMOVE 2 WIRING FOR ESS APPLICATION (276).

1-D-20866-05

CIRCUIT NOTES:(CONT)

CIRCUIT TITLE	SYSTEM	OPTION	LEAD DESIGNATIONS					NOTES
FLOOR ALARM BOARD MISC & AUX ALARM (SD-21203-01)	BCD PANEL	X	AL1	AL2	AL3	AL4	AL5	
MISC ALARMS (SD-20341-01)	BCD PANEL	X	AG					
AUDIBLE ALARM CKT (SD-21871-01)	BCD & GCO PANEL	X	AG					
ATILE PILOT CKT (SD-25087-01)	NO. 1 XBAR	X	F					
ALARM CKT (SD-25671-01)	NO. 5 XBAR	T	MM					
AUDIBLE AND VISUAL ALARM (SD-36181-01)	COM	X	F					
PILOT LAMP CKT (SD-31548-01)	NO. 1 SCS	X	AM					
TONE CKT-INT CONTR. & DIST (SD-31843-01)	ESS			AL2	AL3			
MISC ALM CKT (SD-32192-01)	355A SCS	X	AM					
PILOT LAMP CKT (SD-31573-01)	350A SCS	X	AM					
AUX PSN TRK CKT (SD-99329-01)	COM			AL2	AL3			

107. THE CHANGE CLASSIFICATION "B" FOR ISSUE 13 WAS REVISED TO ISSUE 14B, WITHOUT CIRCUIT CHANGES. ALL REFERENCES TO OPTIONS R AND S THAT APPEARED ON ISSUE 130, ARE REMOVED FROM THE DRAWING.

108. ON ISSUE 12A OPTION U WAS RELETED FROM MANUFACTURE DISCONTINUED TO STANDARD.

EQUIPMENT NOTES:

201. THE 400A TONE GENERATOR REQUIRES 2 X 23 INCHES OF MOUNTING PLATE SPACE.
202. A KS-19221.11 AMPLIFIER COVERED BY SD-99725-01 IS INCLUDED AS PART OF THE 400A TONE GENERATOR.
203. TERMINALS 11, 12, 13, 14, 15, 24, 25, 31, 32, AND 34 OF T81 ARE FOR TEST PURPOSES. SEE FS 1.

INFORMATION NOTES:

301. UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL - (PLUS)
OR - (MINUS) ARE IN VOLTS.
302. REDUCTION IN GENERATOR OUTPUT WITH LOW RESISTANCE
LOAD RESISTANCE REDUCTION IN OUTPUT
100 OHMS 1/2 DB
50 OHMS 1 DB
30 OHMS 1-1/2 DB
20 OHMS 2 DB
303. P-42811 PULSE GENERATORS WHICH INCLUDED P-42810 SERIES 1 AND SERIES 2 PRINTED WIRING BOARD SHOULD NOT BE USED. THESE BOARDS CONTAIN A DESIGN DEFECT WHICH RESULTS IN MALOPERATION OF THE TONE ALARM CIRCUIT. RELAY (A) SHOULD EITHER BE MODIFIED OR RETURNED TO THE WESTERN ELECTRIC CO. FOR MODIFICATION.
304. PRIOR TO ISSUE 60 THE 700A TONE GENERATOR WAS CODED APPARATUS.

SUPPORTING INFORMATION

CATEGORY	NO.
EQUIPMENT DRAWING	J99327A

OPTION INDEX

APP OR WIRING	LOCATION
Z	276
T	APP FIG. 1
X	208
W	208
V	APP FIG. 1
U	APP FIG. 1
Q	APP FIG. 3
P	APP FIG. 3

WORKING LIMITS

MAX. LOOP RESISTANCE FOR T AND R LEADS IS 20 OHMS.

SD-99303-01

1H99

COMMON SYSTEMS
400A TONE GENERATOR CIRCUIT

400A T81 GEN

BELL TELEPHONE LABORATORIES

6S

NOTICE

OFF FOR USE ON
REWORKING SYSTEM
THE BELL SYSTEM
LITERATURE DIVISION

AT&T
STANDARD

SD-99303-01-I

5 SHEETS

ISSUE
18D

1-D-20866-05

CONTROL



-



- | | | | |
|--|---|---|--|
| | 3 | 4 | |
|--|---|---|--|

CONTROL CIRCUIT



- | | | | | |
|---|---|--------------|---|----|
| | | INCORPORATED | | 55 |
| 6 | 7 | 8 | 9 | |

APP FIG. 1

AMPLIFIER			CONNECTOR			GUDGE			TRANSFORMER		
DESIG	LOC	CODE	DESIG	J1	J2	DESIG	LOC	CODE	DESIG	LOC	CODE
AMP 1	2B7	KS-19221, L1		KS-16345, L2	KS-16345, L2	CR1	2F8	444F, 533F	T1	2D8	2530H
				SOCKET	SOCKET	CR2	2D8	444F, 533F			
CAPACITOR			INDUCTOR			RESISTOR					
DESIG	LOC	CODE	DESIG	LOC	CODE	DESIG	LOC	CODE			
C1	2C6	5420				OS1	2F9	W1			
C2	2D6	KS-19658, 197, 500				B1	2F8	191M			
						R2	2F7	KS-14609, L1A, 21.5			

APP FIG. 2

EQ-99654-30 OSCILLATOR (PRINTED WIRING BOARD ASSEMBLY) (SEE NOTE 1)

CAPACITOR			CONNECTOR			INDUCTOR			RESISTOR		
DESIG	LOC	CODE	DESIG	J201	CODE	DESIG	LOC	CODE	DESIG	LOC	CODE
C201	2C1	5770, 0.768		KS-15345, L1	FLUG	L201	2B1	1592B, 0.165H	R201	2A0	65-13490L1-0-2-0000, KS-20810 L1A, 61.9K
C202	2C1	5770, 0.453				L202	2C1	1592B, 0.091H	R202	2A0	65-13490L1-0-2-0000, KS-20810 L1A, 20.5K
C203	2F1	5770, 0.583				L203	2E1	1592B, 0.101H	R203	2A1	65-13490L1-0-15-0000, KS-20810 L1A, 0.147MEG
C204	2F1	5770, 0.583				L204	2G1	1592B, 0.063H	R204	2A0	65-13490L1-0-2-0000, KS-20810 L1A, 3830
C205	2F1	542A							R205	2C0	65-13490L1-0-2-0000, KS-20810 L1A, 3830
									R206	2D0	65-13490L1-0-2-0000, KS-20810 L1A, 61.9K
									R207	2D0	65-13490L1-0-2-0000, KS-20810 L1A, 20.5K
									R208	2D1	65-13490L1-0-15-0000, KS-20810 L1A, 0.147MEG
									R209	2E0	65-13490L1-0-2-0000, KS-20810 L1A, 61.9K
									R210	2E0	65-13490L1-0-2-0000, KS-20810 L1A, 20.5K
									R211	2E1	65-13490L1-0-15-0000, KS-20810 L1A, 0.147MEG
									R212	2E0	65-13490L1-0-2-0000, KS-20810 L1A, 3830
									R213	2D0	65-13490L1-0-2-0000, KS-20810 L1A, 3830
									R214	2D0	65-13490L1-0-2-0000, KS-20810 L1A, 61.9K
									R215	2D0	65-13490L1-0-2-0000, KS-20810 L1A, 20.5K
									R216	2D1	65-13490L1-0-15-0000, KS-20810 L1A, 0.147MEG

NOTES:

1. PRIOR TO ISSUE 80 THE EQ-99654-30 OSCILLATOR HAS THE P-42E817 OSCILLATOR.

NOTICE
SEE FOR USE OR
REPLACEMENT OF
THE NEW SYSTEM
REPLY FIRST
WRITTEN REQUEST

ISSUE
15D

400A TONE GENERATOR CIRCUIT

SD-99303-01-3

BELL TELEPHONE LABORATORIES

BELL

RELAY			
DESIG		ST	TA
CODE		MAGA	MATA
OPTION			
<input checked="" type="checkbox"/>	CONT ARR	LOC	CONT ARR
4	BM	2B5	BM
3	BM	2F4	BM
2	BM		BM
1	BM		BM
COIL	<input checked="" type="checkbox"/>	2E5	<input checked="" type="checkbox"/>

CAPACITOR		
DESIG	LOC	CODE
C301	2B3	603A
C302	2B4	603A
C303	2B3	
C304	2B4	542A
C305	2C3	
C307	2F4	542A
C308	2E5	535A
C309	2F4	602H

CONNECTOR

+	S
•	S
•	N
•	N
•	T
•	M
•	H
•	L
•	O
•	C
•	A
-	

DESIG	P302
CODE	KS-16345, L PLUG
OPTION	
TERM.	.00C
S	2C5
R	2F5
P	2E5
M	2F5
M	2F5
L	2E5
K	2H5
J	2H5
H	2G5
F	2G5
E	2G5
Q	2A3
C	2D5
B	2D5
A	2C3

<u>0100E</u>	
<u>0ESIG</u>	<u>LO</u>
CR301	2F
CR302	2F
CR303	2E
CR304	2C

POTENTIOMETER

<u>DESIG</u>	LOC
R313	203

RESISTOR

ASST		LOC	CODE
#3011	243	46-3344001-1,20000	L5-20810 L18, 19,000
#3012	243	46-3344001-33,00000	L5-20810 L18, 15,33K
#3013	244	46-3344001-50,00000	L5-20810 L18, 15,33K
#3014	245	46-3344001-33,00000	L5-20810 L18, 17,000
#3015	245	46-3344001-33000	L5-20810 L18, 33,320
#3016	245	46-3344001-33000	L5-20810 L18, 30,10
#3017	245	K3-134011, 0,21 MG	
#3017	245	499A-00-00000	L5-20616 L18, 0R EQUIV, 0.226 MG
#3018	254	K3-134011, 10,0000	
#3019	254	46-3344001-50,00000	L5-20810 L18, 51,1K
#3020	254	46-3344001-50,00000	L5-20810 L18, 11,000
#3021	254	K3-134011, 10,0000	
#3022	254	46-3344001-50,00000	L5-20810 L18, 10,0000
#3023	254	46-3344001-50,00000	L5-20810 L18, 10,0000
#3024	254	K3-134011, 10,0000	
#3025	254	499A-00-00000	L5-20616 L18, 0R EQUIV, 14700
#3026	254	46-3344001-50,00000	L5-20810 L18, 2,0000
#3027	254	K3-134011, 2,0000	
#3028	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3029	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3030	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3031	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3032	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3033	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3034	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3035	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3036	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3037	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3038	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3039	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3040	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3041	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3042	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3043	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3044	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3045	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3046	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3047	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3048	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3049	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3050	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3051	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3052	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3053	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3054	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3055	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3056	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3057	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3058	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3059	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3060	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3061	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3062	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3063	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3064	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3065	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3066	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3067	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3068	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3069	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3070	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3071	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3072	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3073	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3074	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3075	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3076	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3077	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3078	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3079	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3080	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3081	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3082	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3083	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3084	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3085	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3086	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3087	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3088	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3089	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3090	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3091	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3092	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3093	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3094	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3095	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3096	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3097	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3098	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3099	254	46-3344001-50,00000	L5-20810 L18, 33,320
#3100	254	46-3344001-50,00000	L5-20810 L18, 33,320

TRANSISTOR

DESIG	LOC	CODE
Q301	2B3	
Q302	2B5	
Q303	203	
Q304	2C4	
Q305	2E3	
Q306	2G4	

VARISTOR

<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
RV301	263	1008

NOTE:

1. PRIOR TO ISSUE 80 THE ED-99657-30 PULSE GENERATOR WAS THE P-42EB11 PULSE GENERATOR.
2. PRIOR TO ISSUE 118 THE ED-99657-31 PULSE GENERATOR WAS THE ED-99657-30 PULSE GENERATOR.

NOTICE
NOT FOR USE OR
DISCLOSURE OUTSIDE
THE BILL SYSTEM
EXCEPT UNDER
WRITTEN ASSIGNMENT

ISSUE
181

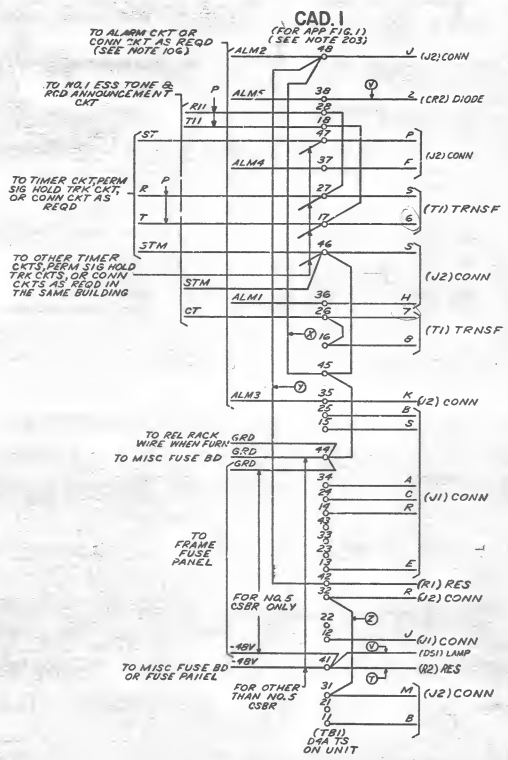
400A TONE GENERATOR CIRCUIT

BELL TELEPHONE LABORATORIES
INCORPORATED

SD-99303-01-4

0 1 2 3 4 5 6 7 8 9

A
B
C
D
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NOTICE
SEE FIG. 48
FOR THE 48
VOLTAGE
LEVEL
THE 48 VOLT
LEVEL
NOTES
NOTES

150

SD-99303-01-5

0 1 2 3 4 5 6 7 8 9